
Space Weather Forecast

Issued on Friday, 12 April 2024 at 13:26 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of G1 Minor Geomagnetic Storms day 2-3 (13-14 Apr). Chance of Moderate flares.

Analysis of Space Weather Activity over past 24 hours.

Solar Activity: Moderate, with a Moderate peak flare giving an R2 Radio Blackout at 11/1706 UTC. This occurred from behind the east limb, likely a combined flare from two returning regions that were active on the other limb around two weeks ago. There are five sunspot regions on the Earth-facing Sun. The two bipolar regions are the most complex, but remain relatively small and simple. The other groups are mature, simple and relatively stable unipolar regions.

A number of coronal mass ejections (CMEs) were observed from around the eastern limb, along with an eruption just southwest of centre disc, due to a filament (line of plasma) being released. The resultant CME is very faint, and still under analysis with current imagery very limited. However preliminary assessment suggests a potential arrival later on day 3 (Apr 14).

Solar Wind / Geomagnetic Activity: Solar wind speeds eased from slightly elevated to near background, from 450-500km/s to around 400km/s. Total Interplanetary Magnetic Field (IMF) strength was weak throughout with the north-south component also varying weakly. Geomagnetic activity was Quiet (Kp 1-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to start at Low levels, but with an increasing chance of Moderate activity later in the period as significant returning regions rotate onto the visible disc.

Solar Wind / Geomagnetic Activity: There are two potential Earth-directed CMEs. The first left the Sun on 11/0540 UTC, and gives the potential for a glancing impact later day 2 or early day 3 (13-14 Apr). The second from 12/0030 UTC, is still under assessment but currently gives a chance of an arrival later on day 3 (14 Apr). Otherwise current slightly elevated winds will continue to gradually ease before the onset of any fast wind from the next coronal hole, most likely occurring later day 2 or day 3 (13-14 Apr). Geomagnetic activity is forecast to be mainly Quiet with Unsettled intervals day 1 and into day 2 (12-13 Apr). This likely increasing to Unsettled to Active with a chance of G1 Minor Storms later day 2 or day 3 (13-14 Apr), especially if any arrivals combine. Any activity easing back to mainly Quiet to Unsettled day 4 (15 Apr).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to persist at background with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	1	20	30	20
Strong	G3	No	1	5	5	5
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	40	50	50	50
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)